EXHIBIT F

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,
Petitioner,

v.

MPH TECHNOLOGIES OY,
Patent Owner.

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IPR2019-00826
Patent 9,838,362 B2

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Before SALLY C. MEDLEY, KAMRAN JIVANI, and
JOHN D. HAMANN, *Administrative Patent Judges.*

JIVANI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

IPR2019-00826
Patent 9,838,362 B2

I. INTRODUCTION AND BACKGROUND

Petitioner Apple Inc. requested an *inter partes* review of claims 1–16 of U.S. Patent No. 9,838,362 B2 (Ex. 1001, "the '362 patent"). Paper 2 ("Petition" or "Pet."). Patent Owner MPH Technologies Oy filed a Preliminary Response. Paper 6 ("Prelim. Resp."). After considering the arguments and evidence of record, we instituted review of all challenged claims on all grounds set forth in the Petition. Paper 7 ("Dec. on Inst.").

During the trial, Patent Owner statutorily disclaimed claims 1, 2, 4, 6–9 and 11 of the '362 patent. Ex. 2013, 2. With respect to remaining claims 3, 5, 10 and 12–16, Patent Owner filed a Response (Paper 13, "PO Resp."), Petitioner filed a Reply (Paper 16, "Reply"), and Patent Owner filed a Sur-Reply (Paper 23, "Sur-Reply").

An oral hearing was held on August 11, 2020, a transcript of which appears in the record. Paper 24 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a), addresses issues and arguments raised during the trial. For the reasons discussed below, we determine that Petitioner has failed to prove by a preponderance of the evidence that claims 3, 5, 10 and 12–16 of the '362 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2018) ("In an *inter partes* review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.").

A. Related Matters

The parties identify *MPH Technologies Oy v. Apple Inc.*, Case No. 4:18-cv-05935-PJH, in the U.S. District Court for the Northern District of California, as a matter that may affect or would be affected by a decision in

IPR2019-00826
Patent 9,838,362 B2

this proceeding. Pet. 2; Paper 4, 1. The parties also identify as related

matters the following additional *inter partes* reviews involving patents

related to the '362 patent: IPR2019-00822, IPR2019-00823,

IPR2019-00824, and IPR2019-00825. Pet. 2; Paper 4, 1 (Patent Owner's

Mandatory Notices).

B.   Real Parties-in -Interest

The parties identify Apple, Inc. and MPH Technologies Oy as the real

parties-in-interest in this proceeding. Pet. 2; Paper 4, 1.

C.   The Challenged Patent (Ex. 1001)

The '362 patent relates to the "secure forwarding of a message from a

first computer to a second computer via an intermediate computer in a

telecommunication network." Ex. 1001, 6:40–43. According to the

'362 patent, "[a]n essential idea of [its] invention is to use the standard

[Internet Protocol ('IP') Security ('IPSec')] protocol . . . between the

intermediate computer and the second computer and an 'enhanced IPSec

protocol' between the first computer and the intermediate computer." *Id.* at

7:40–43, 1:58. More specifically, the '362 patent states,

> The advantage of [its] invention is that [a] logical IPSec
> connection shared by the first and the second computer can be
> enhanced by the first and the intermediate computer without
> involvement of the second computer. In particular[,] the so-
> called 'ingress filtering' performed by some routers [(e.g., the
> second computer)] does not pose any problems when
> translations of addresses are used.

Id. at 10:40–47. Figure 1, shown below, "illustrates an example of a

telecommunication network of the invention" of the '362 patent. *Id*. at

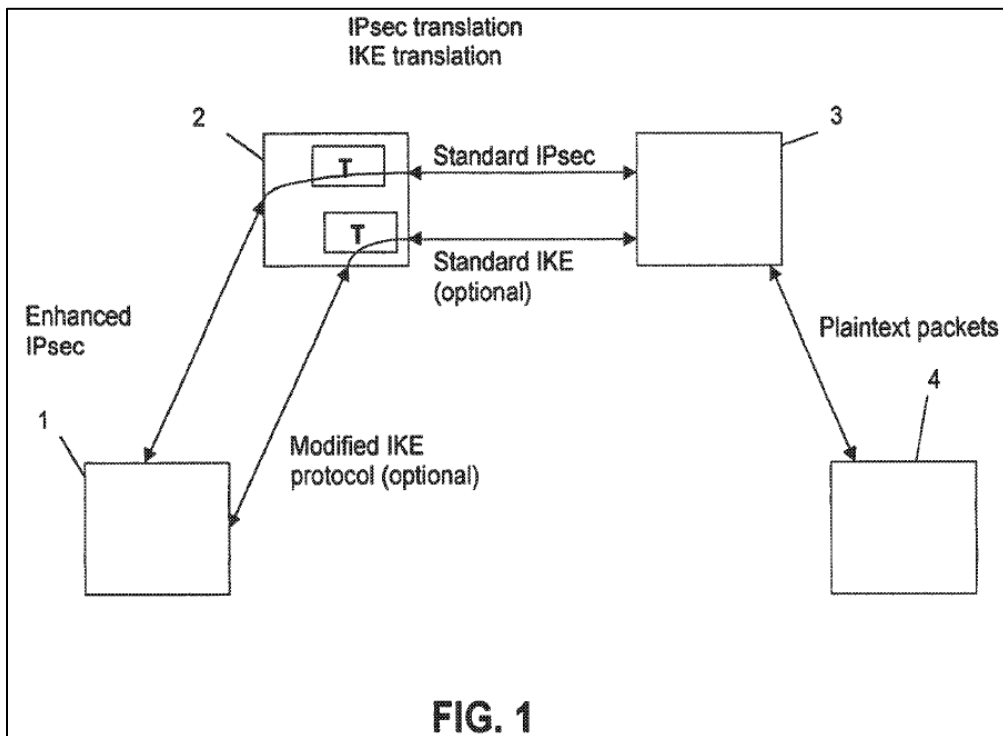9:57–58.

3

IPR2019-00826
Patent 9,838,362 B2

FIG. 1

Figure 1 shows an example of a telecommunication network in accordance with the invention of the '362 patent. *Id.* at 10:7–8. As illustrated, the network comprises: (i) a first computer (client computer 1) that is served by (ii) an intermediate computer (server 2), and (iii) a host computer 4 that is served by (iv) a second computer (security gateway 3). *Id.* at 10:8–12. Security gateway 3 "supports the standard IPSec protocol," while client computer 1 and server 2 support an enhanced IPSec protocol. *Id.* at 10:12–15.

"In the example of F[igure] 1, an IPSec connection is formed between . . . client computer 1 (the first computer) and . . . security gateway 3 (the second computer)." *Id.* at 10:49–51. The '362 patent discloses that "[m]essages to be sent to . . . host terminal 4 from . . . client computer 1 are first sent to . . . server 2, wherein an IPSec translation[, *inter alia*,] . . . takes place." *Id.* at 10:63–65. Put differently, "[w]hen the intermediate computer

4

IPR2019-00826
Patent 9,838,362 B2

[server 2] receives the packet sent . . ., it performs an address and [Security Parameters Index ("SPI")] translation, ensuring that the security gateway (host 3 of F[igure] 1) can accept the packet." *Id.* at 12:4–7, 2:44–45. The '362 patent states that "translation[s can be] . . . performed[, for example,] by means of a translation table stored at the intermediate computer[, with t]he outer IP header address fields and/or the SPI-values [being] changed by the intermediate computer so that the message can be forwarded to the second computer." *Id.* at 7:48–52.

According to the '362 patent, "[m]ost of the packet is secured using IPSec, . . . [but] the intermediate computer . . . is able to use the outer IP addresses and the incoming SPI value to determine how to modify the outer address and the SPI to suite the second computer, which is the next destination." *Id.* at 12:7–14. "[T]he confidentiality of the packets is not compromised, . . . [because] [t]he intermediate computer does not know the cryptographic keys used to encrypt and/or authenticate the packets, and can thus not reveal their contents." *Id.* at 10:35–40. After translation, "the message can be sent to . . . security gateway 3, which sends the message further in plain text to . . . host terminal 4." *Id.* at 10:65–67.

D.   The Challenged Claims

In light of Patent Owner's statutory disclaimer of claims 1, 2, 4, 6–9 and 11 of the '362 patent (Ex. 2013, 2), claims 3, 5, 10, and 12–16 remain at issue in this trial. Ex. 2013, 2 (statutorily disclaiming claims 1, 2, 4, 6–9, and 11). The remaining claims depend ultimately from former independent claim 1, reproduced below.

> 1.   An intermediate computer for secure forwarding of messages in a telecommunication network, comprising:

IPR2019-00826
Patent 9,838,362 B2

> an intermediate computer configured to connect to a telecommunication network;
>
> the intermediate computer configured to be assigned with a first network address in the telecommunication network and to access a mapping between a unique identity and a network address of a first computer;
>
> the intermediate computer configured to receive from a second computer a secure message sent to the first network address having an encrypted data payload of a message and the unique identity of the first computer, the data payload encrypted with a cryptographic key derived from a key exchange protocol; and
>
> the intermediate computer configured to read the unique identity from the secure message sent to the first network address, to use the unique identity to find the network address of the first computer from the mapping, and to securely forward the encrypted data payload to the network address of the first computer using a network address of the intermediate computer as a source address of a forwarded message containing the encrypted data payload wherein the intermediate computer does not have the cryptographic key to decrypt the encrypted data payload.

Ex. 1001, 22:41–65. Further, former dependent claim 2 recites,

> 2.   The intermediate computer of claim 1, wherein the mapping is stored in a translation table.

Id. at 22:66–67. Challenged dependent claim 3 recites,

> 3.   The intermediate computer of claim 1, wherein the intermediate computer is further configured to substitute the unique identity read from the secure message with another unique identity prior to forward the encrypted data payload.

Id. at 23:1–5. Challenged dependent claim 10 recites,

> 10.   The intermediate computer of claim 2, wherein the intermediate computer is configured to modify the translation table entry address fields in response to a signaling message sent from the first computer when the first computer changes its

IPR2019-00826
Patent 9,838,362 B2

>address such that the intermediate computer can know that the
>address of the first computer is changed.

Id. at 24:1–7.

E. Prior Art and Asserted Grounds

As against the claims remaining after Patent Owner's disclaimer,

Petitioner asserts the following grounds of unpatentability (Pet. 7–8):

Claim(s) Challenged	35 U.S.C. §[1]	Reference(s)/Basis
3, 5, 10, 12–15	103(a)	Request for Comments 3104 ("RFC3104")[2] and Grabelsky[3]
16	103(a)	RFC3104, Grabelsky, and Wagner[4]

F. Testimony

Petitioner supports its challenges with a declaration of David

Goldschlag, Ph.D. Ex. 1002. Petitioner further supports its challenges with

a supplemental declaration of Dr. Goldschlag. Ex. 1022. Dr. Goldschlag

testified by deposition on January 30, 2020 and July 7, 2020. Transcripts of

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[1] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '362 patent issued from an application with an effective filing date earlier than March 16, 2013, we apply the pre-AIA version of the statutory basis for unpatentability. Therefore, although Petitioner does not specify a subsection of 35 U.S.C. § 103 in the Petition, we apply 35 U.S.C. § 103(a).

[2] G. Montenegro & M. Borella, *RSIP Support for End-to-end IPsec*, Request for Comments 3104, The Internet Society (Oct. 2001) ("RFC3104") (Ex. 1004).

[3] U.S. Patent No. 7,032,242 B1 (issued Apr. 18, 2006) (Ex. 1006).

[4] David Wagner & Bruce Schneier, *Analysis of the SSL 3.0 Protocol*, Proc. 2d USENIX Workshop on Elec. Com. (Nov. 1996) ("Wagner") (Ex. 1007).

IPR2019-00826
Patent 9,838,362 B2

his testimony taken during the depositions have been entered into evidence. Exs. 2008, 2015.

Patent Owner proffers the declaration of George N. Rouskas, Ph.D. in support of its arguments. Ex. 2002. Dr. Rouskas testified by deposition on May 7, 2020, and a transcript of his testimony has been entered into evidence. Ex. 1023.

Patent Owner also proffers the declaration of Michael S. Borella, Ph.D. in support of its arguments. Ex. 2010. Dr. Borella testified by deposition on May 18, 2020, and a transcript of his testimony has been entered into evidence. Ex. 1024.

II. CLAIM CONSTRUCTION

Because the Petition was filed after November 13, 2018, we construe the challenged claims by applying "the standard used in federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), which is articulated in *Phillips* [*v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc)]."[5] Under *Phillips*, the words of a claim are generally given their "ordinary and customary meaning," which is the meaning they would have to a person of ordinary skill in the art at the time of the invention, in light of the specification and prosecution history. *See Phillips*, 415 F.3d at 1312–13.

Petitioner identifies for construction the term "unique identity," as recited in former claim 1. Pet. 16–18. Patent Owner identifies for

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[5] Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340, 51,343–44, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)).

IPR2019-00826
Patent 9,838,362 B2

construction the term "substitute," as recited in dependent claim 3. PO
Resp. 11–20. We address below the parties' positions on each term.

A.   Unique Identity

In the Petition, Petitioner argues that "unique identity" means "one or
more parameters that uniquely identify a secure connection." Pet. 16. In our
Decision on Institution, "we conclude[d] that no express claim construction
of the term 'unique identity' [wa]s necessary" because in its Preliminary
Response "Patent Owner d[id] not argue that RFC3104 or Grabelsky fails to
disclose this term and, therefore, this term is not in controversy." Dec. on
Inst. 9 (citations omitted). In the subsequent papers, the parties confirm
"that there is no reason to construe this term" because "Patent Owner does
not dispute that some form of a unique identity is found in the primary
reference." PO Resp. 15–16; *see also* Reply 1 (agreeing that this term need
not be construed). Accordingly, we find that no express construction of
"unique identity" is needed. *Nidec Motor Corp. v. Zhongshan Broad Ocean
Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc.
v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)) ("[W]e need
only construe terms 'that are in controversy, and only to the extent necessary
to resolve the controversy.'").

B.   Substitute

Patent Owner argues "[t]he term 'substitute' means 'changing,
replacing, or modifying, not merely adding to.'" PO Resp. 12. Petitioner
argues this term does not "need[] to be expressly construed for purposes of
this proceeding." Reply 2. We disagree with Petitioner because the dispute
between the parties for dependent claim 3 turns on the construction of this
term. *See* Pet. 47–49; PO Resp. 21–27.

IPR2019-00826
Patent 9,838,362 B2

Patent Owner argues in its briefing that in addition to the plain language of the claim, the Specification supports its proposed construction. PO Resp. 12–15. Patent Owner directs our attention to portions of the Specification that describe some modification or replacement of the first address with a new address. *Id.* at 13–14 (citing Ex. 1001, 7:49–53, 12:23–25, 12:11–16). Conversely, Petitioner's counsel stated at oral argument Petitioner's position that "adding the header is the same as replacing the header because at the end of the day you have a different header than what you had before, a completely different header." Tr. 39:16–19.

We agree with Patent Owner that the cited passages describe modification or replacement and not "adding to." Ex. 1001, 7:49–53, 12:23–25, 12:11–16. We further agree that the Specification distinguishes between adding and substituting. PO Resp. 15 (citing Ex. 1001, 5:36–39, 10:36–39).

Accordingly, we construe "substitute" to mean "changing, replacing, or modifying, not merely adding to."

III. ANALYSIS OF ASSERTED GROUNDS

A. *Statutory Disclaimer of Claims 1, 2, 4, 6–9, 11*

As a preliminary matter, we address the status of independent claim 1 and its dependent claims 2, 4, 6–9, and 11. After we instituted this *inter partes* review, Patent Owner filed a statutory disclaimer under 37 C.F.R. § 1.321 disclaiming and dedicating to the public these claims of the '362 patent. Ex. 2013, 2 (statutory disclaimer of claims 1, 2, 4, 6–9 and 11); 35 U.S.C. § 253(a) (2018) (providing that a patentee may "make disclaimer of any complete claim" in writing with the Patent and Trademark Office, and such disclaimer "shall thereafter be considered as part of the original patent"). Patent Owner contends that we should not address these claims in

10

IPR2019-00826
Patent 9,838,362 B2

this Decision because of the disclaimer and, instead, should treat these claims as if they never existed. PO Resp. 15. At oral argument, counsel for Petitioner agreed with Patent Owner's position. Tr. 8:23–9:1 ("I think our position is that we do agree with Patent Owner in that regard in that because they're disclaimed there's nothing to really address. They're no longer in the patent.")

    We agree with the parties that we need not address the patentability of statutorily disclaimed claims 1, 2, 4, 6–9, and 11 of the '362 patent in this Decision. Rather, following Federal Circuit case law, we treat these former claims as if they never existed. *See Guinn v. Kopf*, 96 F.3d 1419, 1422 (Fed. Cir. 1996) ("A statutory disclaimer under 35 U.S.C. § 253 has the effect of canceling the claims from the patent and the patent is viewed as though the disclaimed claims had never existed in the patent.").

    Consistent with other Board decisions in which some, but not all, challenged claims have been disclaimed after institution, we address below the patentability only of the remaining claims. *See, e.g.*, *Intel Corp. v. VLSI Tech. LLC*, IPR2018-01040, Paper 36 at 16 (PTAB Feb. 12, 2020) (Final Written Decision); *LG Elecs., Inc. v. Wi-LAN Inc.*, IPR2018-00673, Paper 48 at 3 (PTAB Sept. 5, 2019) (Final Written Decision).

B. Principles of Law

    Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail in its challenges, Petitioner must show by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

IPR2019-00826
Patent 9,838,362 B2

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective evidence of non-obviousness such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results.[6] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) ("the Graham factors"). The obviousness inquiry further requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")).

C. Level of Ordinary Skill in the Art

To determine whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In assessing the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are

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[6] Patent Owner does not present arguments or evidence of such objective evidence of non-obviousness in its Response. *See generally* PO Resp.

IPR2019-00826
Patent 9,838,362 B2

made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). "[O]ne or more factors may predominate." *Id.*

In our Decision on Institution, we adopted Petitioner's proposed definition for one having ordinary skill in the art at the time of the invention as one who would have had "a Bachelor's (B.S.) degree in Computer Science, Computer Engineering, Electrical Engineering, or an equivalent field, as well as at least 2–5 years of academic or industry experience in the field of Internet security." Dec. on Inst. 7–8 (citing Pet. 16; Ex. 1002 ¶¶ 31–32). Patent Owner does not dispute our adoption of Petitioner's definition, nor otherwise address the level of ordinary skill at the time of the invention of the '362 patent. *See generally* PO Resp.; *see also* Ex. 2002 ¶ 22.
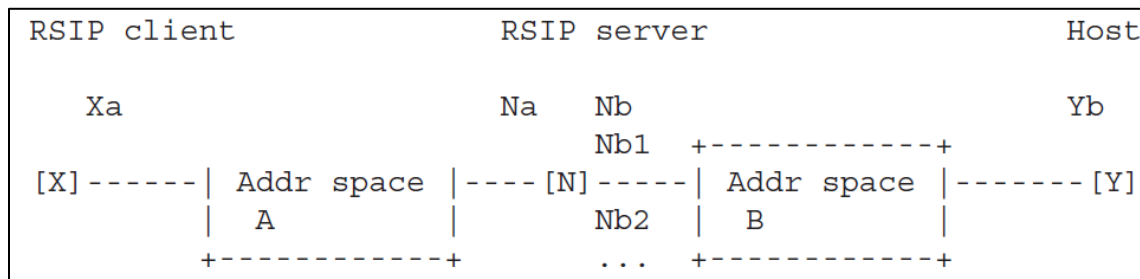
Because Petitioner's definition of the level of skill in the art is consistent with the '362 patent and the asserted prior art, we maintain Petitioner's definition for purposes of this Final Written Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978). We apply Petitioner's definition in our analysis below.

D.   Alleged Obviousness over RFC3104 and Grabelsky

1.   Summary of RFC3104

RFC3104 "proposes mechanisms to handle," and "specifies RSIP extensions to enable," end-to-end IPSec. Ex. 1004, 1–2. A figure appearing on page 2 of RFC3104 is reproduced below.

IPR2019-00826
Patent 9,838,362 B2

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RSIP client                    RSIP server                      Host

    Xa                     Na    Nb                              Yb
                                 Nb1   +------------+
 [X]------| Addr space |----[N]-----| Addr  space |-------[Y]
          |    A       |            Nb2 |    B        |
          +------------+            ...  +------------+
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The figure reproduced above illustrates a "model" topology, in
accordance with RFC3104's teachings. *Id.* at 2. RFC3104 provides this
"model" topology "[f]or clarity" in discussing its teachings. *Id.* As shown,
"[h]osts X and Y belong to different address spaces A and B, respectively,
and N is an [intermediate] RSIP server." *Id.* at 3. RFC3104 teaches that "N
has two addresses: Na on address space A, and Nb on address space B. For
example, A could be a private address space, and B the public address space
of the general Internet." *Id.*

RFC3104 enables "RSIP client X to initiate . . . IP[S]ec sessions to a
legacy . . . IP[S]ec node Y." *Id.* To that end, RFC3104 teaches that "RSIP
client X and server N must arrive at an SPI value to denote the incoming
IP[S]ec security association [("SA")] from Y to X." *Id.* at 5. RFC3104 adds:
"Once N and X make sure that the SPI is unique within both of their SPI
spaces, X communicates its value to Y as part of the IP[S]ec [SA] . . .
establishment process." *Id.* According to RFC3104, "[t]his ensures that Y
sends IP[S]ec packets . . . to X via address Nb using the negotiated SPI." *Id.*
In such a scenario, "IP[S]ec packets from Y destined for X arrive at RSIP
server N." *Id.* "RSIP server N . . . examin[es the] packet[s] sent by Y,
destined for X[, which] . . . implies that 'source' refers to Y and 'destination'
refers to Y's peer, namely, X's presence at N." *Id.* at 3. N demultiplexes
each of the IPSec packets "based on the following minimum tuple of

14

IPR2019-00826
Patent 9,838,362 B2

demultiplexing fields:" protocol, SPI, and destination IP address. *Id.* at 5. RFC3104 teaches that "[i]f N is able to find a matching mapping, it tunnels the packet to X according to the tunneling mode in effect." *Id.* Otherwise, RFC3104 teaches that "N . . . MUST discard the packet." *Id.*

2. *Summary of Grabelsky*

Grabelsky relates to allowing IPSec "to be used with distributed network address translation . . . by mapping a local . . . [IP] address of a given local network device and a IP[S]ec . . . [SPI] associated with an inbound IP[S]sec [SA] . . . that terminates at the local network device." Ex. 1006, code (57). "A router allocates locally unique security values that are used as the IP[S]ec SPIs." *Id.* Figure 21, shown below, "is a block diagram illustrating a SPI-to-internal network address table layout." *Id.* at 6:13–14.
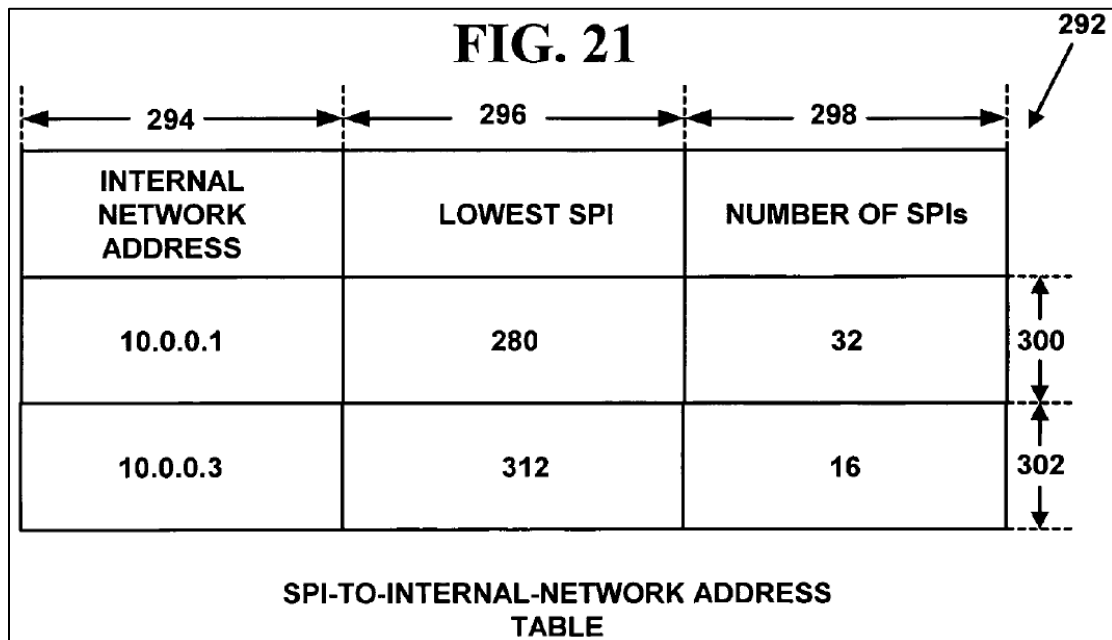
FIG. 21

INTERNAL NETWORK ADDRESS	LOWEST SPI	NUMBER OF SPIs	
294	296	298	292
10.0.0.1	280	32	300
10.0.0.3	312	16	302

SPI-TO-INTERNAL-NETWORK ADDRESS TABLE

Figure 21, shown above, illustrates "a SPI-to-internal network address table," in accordance with Grabelsky's teachings. *Id.* at 27:56–57. Grabelsky teaches that "a network address for [a] first network device is

15

IPR2019-00826
Patent 9,838,362 B2

stored with . . . one or more locally unique security values in a table [(e.g.,
the table of Figure 21)] associated with [a] second network device." *Id.* at
27:21–24, 27:56–58. Grabelsky teaches that "[t]he table is used to maintain
a mapping between a network device and a locally unique security value for
distributed network address translation with security." *Id.* at 27:24–27.

In accordance with Grabelsky's teachings, for incoming packets using
IPSec, the router (which routes data packets to another external computer
network) maintains a mapping between local IP addresses of network
devices and SPI values. *Id.* at 6:34–35, 32:32–34. Grabelsky teaches that
when an IPSec packet arrives on the router, the router examines a SPI value
in the IPSec packet's outermost header, which is typically visible. *Id.* at
32:35–39. "The SPI value in the IP[S]ec header is used to determine a local
IP address of a destination network device," according to Grabelsky's
teachings. *Id.* at 32:39–41.

3. Claim 3

Claim 3 depends from independent claim 1, and recites "[t]he
intermediate computer of claim 1, wherein the intermediate computer is
further configured to substitute the unique identity read from the secure
message with another unique identity prior to forwarding the encrypted data
payload." Ex. 1001, 23:1–5. Petitioner argues that "RFC3104, alone or in
combination with Grabelsky," teaches this limitation because "RFC3104 and
Grabelsky disclose that the combination of the outermost IP header and the
IPSec protocol header is changed by RSIP server N before forwarding the
packet to host X." Pet. 47–48.

Petitioner relies on RFC3104's description that "[i]f N is able to find a
matching mapping, *it tunnels the packet to X according to the tunneling*

16

IPR2019-00826
Patent 9,838,362 B2

mode in effect" to meet the claim limitation. *Id*. at 48 (citing Ex. 1004, 5).

Petitioner argues that although RFC3104 does not explicitly provide

tunneling details, one of ordinary skill in the art "would have understood that

tunneling the packet involves adding or replacing an outer IP header of the

packet with an IP Header that includes the destination address of host X."

Id. (citing Ex. 1002 ¶ 127). Petitioner further argues that one of ordinary

skill in the art "would have been specifically motivated to replace the

outermost IP header of the packet with a new IP header in order to minimize

packet size and reduce overhead." *Id*. (citing Ex. 1002 ¶ 128). Petitioner

argues that it would have been obvious to substitute the outer IP header with

a new IP header, including the destination address of host X, to create

"another unique identity." *Id*. at 49 (citing Ex. 1002 ¶ 129) (emphasis

omitted). Petitioner argues that the parameter values that make up the

second "*unique identity*" (i.e., the new IP header and IPsec protocol header)

are different from the parameter values that make up the original "*unique

identity*" (i.e., the replaced IP header and IPsec protocol header). *Id*.

Petitioner argues that "even if the RSIP server N in RFC3104 were to

add a new IP header to the existing outer IP header, the parameter values

included in the combination of the new outer IP header and the IPSec

protocol header would still be different than those that make up the original

'unique identity'" or that one of ordinary skill in the art "would have

expected RSIP server N to *replace* the existing outer IP header with a new

IP header." *Id*. (citing Ex. 1002 ¶ 130).

As explained above, we adopt Patent Owner's construction that

"substitute" means "changing, replacing, or modifying, not merely adding

to." *See supra* Section II.B. Accordingly, we reject Petitioner's arguments

17

IPR2019-00826
Patent 9,838,362 B2

that "adding" a new IP header to an existing outer IP header, results in "substituting" as claimed.[7]

For the claim phrase "substitute the unique identity read from the secure message with another unique identity," Petitioner argues RFC3104 describes "tunnel[ing] the packet to X according to the tunneling mode in effect." Pet. 48 (citing Ex. 1004, 5) (emphasis omitted). Petitioner further argues that although RFC3104 does not explicitly provide tunneling details, one of ordinary skill in the art "would have understood that tunneling the packet involves adding or replacing an outer IP header of the packet with an IP Header that includes the destination address of host X." *Id.* (citing Ex. 1002 ¶ 127). Petitioner, however, fails to show that "tunneling the [RFC3104] packet involves . . . *replacing* an outer IP header of the packet with an IP Header that includes the destination address of host X." Petitioner directs our attention to Dr. Goldschlag's testimony in support of its argument. *Id.* (citing Ex. 1002 ¶ 127). Dr. Goldschlag's testimony, however, merely repeats the allegations of the Petition. *See* Ex. 1002 ¶ 127. There is no factual basis in support of the assertion that a person having ordinary skill in the art would have understood that tunneling as described in RFC3104 involves replacing one thing for another. We accord such *ipse dixit* little weight. *See Securus Techs. Inc. v. Glob. Tel*Link Corp.*, 701 F.

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[7] For example, Dr. Goldschlag testifies that while one of ordinary skill in the art "would be motivated to *replace* the outer IP header . . . even if the RSIP server N in RFC3104 were to add a new IP header to the existing outer IP header, [one of ordinary skill in the art] would recognize that a "*another unique identity*" would still be substituted for the original "*unique identity*." Ex. 1002 ¶ 130; *see also* Pet. 52 (contending the same). Petitioner provides no reasons why we should construe "substituting" to mean "adding" in the context of the dependent claim 3.

IPR2019-00826
Patent 9,838,362 B2

App'x 971, 974–976 (Fed. Cir. 2017) (affirming the Board's determination that conclusory testimony by an expert witness was insufficient to satisfy Petitioner's burden of showing that the skilled artisan would have modified the references as asserted); *see also* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

Moreover, and independently, record evidence describes tunneling as adding something to an existing packet, not replacing one thing for another within a packet. For instance, the '362 patent describes tunneling in the context of adding a header to an existing packet, not replacing a header. Ex. 1001, 3:37–53 ("In other words, the first step in protecting the packet using tunnel mode is to add a new header to the packet."). Grabelsky also describes tunneling in the context of adding a header, not replacing a header. Ex. 1006, 21:52–55, 32:41–46. Thus, we agree with Patent Owner, and find that record evidence does not indicate that RFC3104's "tunneling" involves anything but "adding." PO Resp. 24–26.

Petitioner also argues that one of ordinary skill in the art "would have been specifically motivated to replace the outer IP header of the packet with a new IP header in order to minimize packet size and reduce overhead." Pet. 48 (citing Ex. 1002 ¶ 128). Dr. Goldschlag states the same, without directing attention to any supporting evidence for his conclusion. Ex. 1002 ¶ 128. Petitioner's position, however, is based on the premise that "tunneling" includes replacing, which as we state above, has not been shown. In other words, Petitioner fails to direct us to evidence, beyond Dr. Goldschlag's conclusory testimony, showing a person having ordinary skill in the art at the time of the invention even knew that replacing the outer

19

IPR2019-00826
Patent 9,838,362 B2

IP header of the packet with a new IP header was an option. *See Securus Techs. Inc.*, 701 F. App'x at 974–976; *see also* 37 C.F.R. § 42.65(a). In addition, Petitioner directs us to no evidence, beyond Dr. Goldschlag's conclusory testimony, to support its assertion that one of ordinary skill in the art at the time of the invention would have been motivated to replace "the outer IP header of the packet with a new IP header" in order to "minimize packet size and reduce overhead." *See* Pet. 48 (citing Ex. 1002 ¶ 128).

For all of these reasons, we find that Petitioner has not demonstrated by a preponderance of the evidence that claim 3 is unpatentable under 35 U.S.C. § 103(a) based on RFC3104 and Grabelsky.

4. Claim 5

Claim 5 depends from dependent claim 2 and recites, in relevant part, "the translation table includes two partitions, the second partition containing information fields related to the connection over which the secure message is sent to the first network address, the first partition containing information fields related to the connection over which the forwarded encrypted data payload is sent to a destination address." Ex. 1001, 23:8–14.

Relying on Dr. Glodschlag, Petitioner contends, a person of ordinary skill in the art "would have been motivated to employ a translation table in RFC3104 mapping the set of 'demultiplexing fields' to the destination address of the IPSec SA (e.g., the address of RSIP client X)." Pet. 50 (citing Ex. 1002 ¶ 132). "[T]his table would include two partitions, including: (1) the value of the destination address of the IPSec SA; and (2) values of the 'demultiplexing fields' used in the packet sent from host Y to RSIP server N." *Id.* Beginning with host Y as the starting point, Petitioner maps RSIP server N's address Nb to the claimed first network address and host X

20

IPR2019-00826
Patent 9,838,362 B2

as the claimed destination address. *Id.* at 50–51 (citing Ex. 1002 ¶¶ 133–134); *see also* Reply 14–18. We are unpersuaded by Petitioner's arguments for the following reasons.

First, we disagree with Petitioner that one of ordinary skill in the art would have understood the limitation "'the first partition containing information fields related to the connection over which the forwarded encrypted data payload is sent to a destination address' to simply refer to the *type* of fields that make up the first partition, not the number of fields that must be present." Reply 4 (citing Ex. 1022 ¶ 10) (emphasis omitted). Rather, we agree with Patent Owner that claim 5 "provides that the first partition has more than one field." PO Resp. 28. The claim recites "fields," which is plural and, thus, requires two or more fields. Ex. 1001, 23:8–14. Petitioner does not cite to any portion of the Specification or other claim language that supports finding that "fields" includes the singular. *See generally* Pet.; Reply. Rather, Petitioner reads "fields" out of the claim in arguing that "the information contained in the first partition must merely relate to '*the connection over which the forwarded encrypted data payload is sent to a destination address*.'" Reply 4. We likewise find Petitioner's citation to the Specification for this argument unavailing because it is directed to what the "information" is related, instead of the number of required "fields." *Id.* (citing Ex. 1001, 11:48–50). In addition, we find Dr. Goldschlag's testimony that one of ordinary skill in the art would have understood that information fields simply "refers to the *type* of fields that make up the second partition, not the number of fields that must be present" unsupported by factual evidence, and we give it little weight. *See* Ex. 1022 ¶ 10; 37 C.F.R. § 42.65(a).

IPR2019-00826
Patent 9,838,362 B2

Second, we agree with Patent Owner and find that "[t]he column in Grabelsky that is the claimed first partition according to Petitioner's argument has only a single field—Internal Network Address 294," rather than two or more fields. PO Resp. 30; *see also* Ex. 1006, Fig. 21; Pet. 51 (citing Ex. 1002 ¶ 132).

Moreover, we find unavailing Petitioner's reliance on Dr. Goldschlag's testimony for having more than one field. Dr. Goldschlag testifies that one of ordinary skill in the art

> would have been motivated to include *more than the destination address* of the IPSec SA *in the first partition*, for example also including the other "demultiplexing fields" (i.e., the SPI and protocol) so that values of the first partition could simply be substituted with values of the second partition in the data packet sent from server N to host X.

Pet. 51 (citing Ex. 1002 ¶ 134) (emphasis added); Reply 4–7.

Dr. Goldschlag also testifies that "RFC3104 further suggests a multitude of other fields that [one of ordinary skill in the art] . . . *would naturally have included* in the second partition in addition to those examples provided in the Petition." Ex. 1022 ¶ 11 (emphasis added); Reply 5. Dr. Goldschlag cites, for example, RFC3104's teaching of a "ASSIGN_REQUEST_RSIPSEC" message, which he testifies "'is used by an RSIP client to request IPsec parameter assignments,' including fields such as 'an IP address and SPIs.'" Ex. 1022 ¶ 12. In addition, Dr. Goldschlag testifies that the "ASSIGN_REQUEST_RSIPSEC message is sent by Host X to request a *binding* such that Server N allocates resources for Host X to subsequently establish an IPSec secure connection," and that "[t]he parameters of this binding[, such as Lease Time,] are stored at RSIP server N." Ex. 1022 ¶ 13 (quoting Ex. 2002 ¶ 124; citing Ex. 2004, 5).

22

IPR2019-00826
Patent 9,838,362 B2

According to Dr. Goldschlag, "this binding forms the 'mapping' that RFC3104 refers to when demultiplexing 'IPsec packets from Y destined for X.'" *Id.* (citing Ex. 1004, 5; Ex. 1002 ¶¶ 91–92). Dr. Goldschlag testifies that because "this binding is stored at the RSIP server N, [one of ordinary skill in the art] . . . would have recognized that *it would be logical* to store the parameters of this binding together." Ex. 1022 ¶ 15 (emphasis added); Reply 18. Dr. Goldschlag opines that "in the combination of RFC3104 and Grabelsky, these parameters *could be, and most logically would be*, stored in the translation table, and that "it would have been obvious to include the assigned parameters in the table's 'first partition' so that the parameters could easily be retrieved based on RFC3104's 'minimum tuple of demultiplexing fields.'" Ex. 1022 ¶ 15 (citing Ex. 1004, 5) (emphasis omitted and added).

We are not persuaded by Dr. Goldschlag's testimony, which in our view, taken as a whole, is improperly guided by hindsight to reconstruct the invention of claim 5. *See Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) ("[W]e cannot allow hindsight bias to be the thread that stitches together prior art patches into something that is the claimed invention."); *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." (citation omitted)).

Dr. Goldschlag opines, for example, that (i) there are "a multitude of other fields that [one of ordinary skill in the art] . . . *would naturally have included* in the second partition; (ii) "*it would be logical* to store the parameters of th[e] binding together"; and (iii) "these parameters *could be,*

23

IPR2019-00826
Patent 9,838,362 B2

and most logically would be, stored in the translation table." Ex. 1022
¶¶ 11–15 (emphases added). We find these opinions are akin to arguing
what *could* be combined, and evidences hindsight bias. *See id.*; *see also*
InTouch Tech., Inc. v. VGO Comm., Inc., 751 F.3d 1327, 1352 (Fed. Cir.
2014) (finding hindsight bias in expert testimony that "primarily consisted of
conclusory references to [the] belief that one of ordinary skill in the art *could*
combine these references, not that one *would* have been motivated to do
so").

Also, we find conclusory Dr. Goldschlag's testimony that one of
ordinary skill in the art "would have been motivated to include more than the
destination address of the IPSec SA . . . in the first partition so that values of
the second partition could simply be substituted with values of the first
partition in the data packet sent from server N to host X." Ex. 1002 ¶ 134.
There is no factual support underlying Dr. Goldschlag's opinion that one of
ordinary skill in the art would have been so motivated. We also find
conclusory Dr. Goldschlag's testimony that "it would have been obvious to
include the assigned parameters in the table's 'first partition' so that the
parameters could *easily* be retrieved based on RFC3104's 'minimum tuple
of demultiplexing fields.'" Ex. 1022 ¶ 15 (emphasis added). Such a
statement "that the parameters could *easily* be retrieved" is generic, and fails
to provide necessary factual support — it is akin to stating in a conclusory
fashion that the combination "would have been obvious." *See In re Van Os*,
844 F.3d 1359, 1361 (Fed. Cir. 2017); *see also ActiveVideo Networks Inc. v.
Verizon Comm., Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (finding expert
testimony of motivation to combine "to build something better," "more

24

IPR2019-00826
Patent 9,838,362 B2

efficient, cheaper, or" something that "had more features" was generic and insufficient).

Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claim 5 of the '362 patent would have been obvious to one of ordinary skill in the art in view of RFC3104 and Grabelsky.

5. *Claim 10*

Claim 10 depends from dependent claim 2 and recites, in relevant part, "the intermediate computer is configured to modify the translation table entry address fields in response to a signaling message sent from the first computer when the first computer changes its address such that the intermediate computer can know that the address of the first computer is changed." Ex. 1001, 24:1–7. Thus, claim 10 requires, *inter alia*, "the intermediate computer is configured to *modify* the translation table entry address fields in response to a signaling message." *Id.* (emphasis added).

Petitioner argues that RFC3104 teaches this limitation. Pet. 52–55; Reply 7–12. More specifically, Petitioner argues that RFC3104's ASSIGN_REQUEST_RSIPSEC message acts as the signaling message. Pet. 55 (citing Ex. 1004, 7; Ex. 1002 ¶ 146). According to Petitioner, a ASSIGN_REQUEST_RSIPSEC message requests IPSec parameter assignments, and once assigned, "an SA can be established between the RSIP client and its peer." *Id.* (citing Ex. 1004, 5; Ex. 1002 ¶ 147). Petitioner argues that this includes "creating a table entry mapping the 'minimum tuple of demultiplexing fields' to the network address of the RSIP client." *Id.* (citing Ex. 1004, 5; Ex. 1002 ¶ 145). Put differently, "for packets sent from Y to RSIP client X, RSIP server N would require adding a table entry mapping the 'minimum tuple of demultiplexing fields' to the

25

IPR2019-00826
Patent 9,838,362 B2

network address of RSIP client X," according to Petitioner. *Id.* (citing

Ex. 1004, 5; Ex. 1002 ¶ 147). Petitioner argues that adding this table entry

teaches "modify[ing] the translation table entry address fields." *Id.*

We are not persuaded by Petitioner's arguments. The plain language

of claim 10 requires "modify[ing] the translation table entry address fields."

In other words, the claim recites "modify[ing]," which requires having

existing address fields in the translation table when the mobile changes its

address. Petitioner sets forth no persuasive arguments that "modify[ing]"

the address fields covers "creating" or "adding" a table entry having new

address fields. *See* Pet. 52–55; Reply 7–12. Moreover, modifying the

translation table entry address fields occurs "when the first computer

changes its address such that the intermediate computer can know that the

address of the first computer is changed." Ex. 1001, 24:4–7. This further

indicates that the table contained an entry with existing address fields for the

mobile computer because otherwise, the intermediate computer would not

know that there is an address that changed, as opposed to simply a new

connection. Furthermore, having existing address fields in an existing entry

is consistent with the Specification, which discloses the following:

> The first computer may be a mobile terminal, the outer address
> of which changes from time to time. The translation table is then
> modified using some form of signalling[sic] messages, as
> described in the summary section. Upon receiving a request for
> modifying a translation, the intermediate computer updates the
> related translation table entry to match the new information
> supplied by the first computer.

Ex. 1001, 13:22–28. In particular, the Specification discloses that "the

intermediate computer *updates* the related translation table entry to match

26

IPR2019-00826
Patent 9,838,362 B2

the new information," which by the plain meaning of "updates," requires an existing entry and existing address fields. *Id.*

Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claim 10 of the '362 patent would have been obvious to one of ordinary skill in the art in view of RFC3104 and Grabelsky.

6.   *Claim 12*

Claim 12 depends from former independent claim 1, and recites in relevant part, "the source address of the forwarded message is the same as the first network address." Ex. 1001, 24:10–12. Petitioner argues that RFC3104 in view of Grabelsky, teaches this limitation. Pet. 43–46, 56; Reply 13–16. We disagree.

Petitioner fails to show that "the source address of the forwarded message is *the same* as the first network address," as recited in the claim. Ex. 1001, 24:10–12 (emphasis added). Notably, Petitioner "does not assert that addresses Na and Nb are the same address." Reply 13; *see also* Ex. 1022 ¶ 25 (Petitioner's expert, Dr. Goldschlag, declaring that "[n]either the Petition nor my original declaration asserts that addresses Na and Nb are the same address"). Rather, Petitioner argues that each of Na and Nb is a first network address, and "when a message sent from Y to X is received by RSIP server N on the Nb interface, it must also be sent to the Na interface so that the Na interface can ultimately forward the message to client X." Reply ¶ 26 (citing Pet. 29, 45; Ex. 1002 ¶ 87) (emphasis omitted); *see also* Pet. 43–44 (citing Ex. 1002 ¶ 119) (arguing that a secure message sent to RSIP server N via address Nb is also sent to address Na as part of RFC3104's tunneling operation). But, there is no record evidence that the mobile computer sends the message directly to the Nb address. Rather, the

27

IPR2019-00826
Patent 9,838,362 B2

immediate computer "would have to process and forward those packets from Address Space B to Address Space A." Reply 15 (quoting Ex. 1023, 82:11–83:6; citing Ex. 1022 ¶¶ 28–29) (emphasis omitted). Thus, "the intermediate computer has a source address for each network, both of which identify the same computer." Ex. 1002 ¶ 119. This is not the same as showing that address Na and Nb are the same, as the claim language requires. *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998) ("[T]he name of the game is the claim." (emphasis omitted)). Dr. Goldschlag's testimony cited for this limitation is contrary to these findings and we afford it little weight.

Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claim 12 of the '362 patent would have been obvious to one of ordinary skill in the art in view of RFC3104 and Grabelsky.

7.   *Claims 13–15*

Claim 13 depends from former independent claim 1, and recites in relevant part, "the intermediate computer is configured to receive a request to update the mapping with a new address of the first computer." Ex. 1001, 24:13–15. Petitioner relies on its analysis of claim 10 for its analysis of this similar claim limitation. Pet. 57 ("For the same reasons as discussed with respect to claim 10, RFC, alone or in combination with Grabelsky, teaches this element."); Reply 16–17.

Claims 14 and 15 each depend from claim 13. Ex. 1001, 24:16–21. Petitioner's analysis of these claims does not remedy the deficiencies discussed above in the context of claim 10. Pet. 58; Reply 17 ("Claims 13–15 are further rendered obvious for the reasons set forth in the Petition and for the reasons discussed above with respect to claim 10.)

28

IPR2019-00826
Patent 9,838,362 B2

Accordingly, for the same reasons discussed above with respect to claim 10, we conclude Petitioner has not demonstrated by a preponderance of the evidence that claims 13–15 of the '362 patent would have been obvious to one of ordinary skill in the art in view of RFC3104 and Grabelsky. *See supra* Section III.D.7.

E. *Alleged Obviousness over RFC3104, Grabelsky, and Wagner*

1. *Claim 16*

Claim 16 depends from claim 13, which in turn depends from claim 10. Ex. 1001, 24:22–24. Petitioner's analysis of claim 16 does not remedy the deficiencies discussed above in the context of claim 10. Pet. 61–63; Reply 17 ("As discussed above, claims 10 and 13 are rendered obvious by the combination of RFC3104 and Grabelsky. Claim 16 is further rendered obvious for the reasons set forth in the Petition."). Accordingly, for the same reasons discussed above with respect to claim 10, we conclude Petitioner has not demonstrated by a preponderance of the evidence that claim 16 of the '362 patent would have been obvious to one of ordinary skill in the art in view of RFC3104 and Grabelsky. *See supra* Section III.D.7.

IV. CONSTITUTIONAL CHALLENGE

Patent Owner argues, "[t]his proceeding should be dismissed because the assigned Administrative Patent Judges are principal officers of the United States and yet were not appointed by the President and confirmed by the Senate as required by the Appointments Clause of the United States Constitution." PO Resp. 51. Patent Owner continues that the Federal Circuit's remedy in *Arthrex Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320, 1337 (Fed. Cir. 2019), *cert. granted sub nom. United States v. Arthrex, Inc.*, 2020 WL 6037206 (Oct. 13, 2020) was inadequate to cure the Constitutional

29

IPR2019-00826
Patent 9,838,362 B2

violation. *Id.* We decline to consider Patent Owner's arguments as the issue has been addressed by the Federal Circuit. *See Arthrex*, 941 F.3d at 1337 ("This as-applied severance . . . cures the constitutional violation."); *see also Arthrex, Inc. v. Smith & Nephew, Inc.*, 953 F.3d 760, 764 (Fed. Cir. 2020) (en banc) (Moore, J., concurring in denial of rehearing) ("Because the APJs were constitutionally appointed as of the implementation of the severance, *inter partes* review decisions going forward were no longer rendered by unconstitutional panels.").

Additionally, Patent Owner notes that "the challenged patent was applied for and published before enactment of the America Invents Act (AIA)." PO Resp. 51. According to Patent Owner, "[s]ubjecting such patents to AIA proceedings is an unconstitutional taking of property without just compensation and an unconstitutional deprivation of property without due process." *Id.* (citing U.S. Const. amend. V). We decline to consider Patent Owner's arguments as the issue has been addressed by the Federal Circuit. *See Celgene Corp. v. Peter*, 931 F.3d 1342, 1357–1363 (Fed. Cir. 2019), cert. denied 2020 WL 3405867 (June 22, 2020) (Takings Clause) and *Sound View Innovations, LLC v. Hulu*, LLC, Nos. 2019-1865, 2019-1867, 2020 WL 3583556, *3 (Fed. Cir. July 2, 2020) (non-precedential) (Due Process Clause).

30

IPR2019-00826
Patent 9,838,362 B2

V. CONCLUSION

For the reasons discussed above, we determine Petitioner has failed to show any claim unpatentable, as summarized in the following table:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
3, 5, 10, 12–15	103(a)	RFC3104, Grabelsky		3, 5, 10, 12–15
16	103	RFC3104, Grabelsky, Wagner		16
Overall Outcome				3, 5, 10, 12–16

VI. ORDER

Accordingly, it is:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 3, 5, 10, 12–16 of the '362 patent are unpatentable; and

FURTHERED ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

31

IPR2019-00826
Patent 9,838,362 B2

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